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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/511,047	06/23/2005	Vili Ravanko	18320	6216

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EXAMINER	
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ART UNIT	PAPER NUMBER
1623	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/511,047	RAVANKO ET AL.	
	Examiner	Art Unit	
	Roy P. Issac	1623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 March 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1, 5-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 5-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This application is a 371 of PCT/EP03/01091 filed 02/04/2003.

This Office Action is in response to Applicant's amendment/ remarks/ response filed 03/13/2007, wherein claims 1 and 5-16 were amended, claims 2-4 were cancelled, and new claims 17-21 were newly submitted. Claims 1 and 5-21 are currently pending and are examined on the merits herein.

Rejections Withdrawn

As indicated above, applicant's arguments/response filed 03/13/2007 cancelled claims 2-4. All rejections and objections made with respect to the cancelled claims, claims 2-4, in the previous office action are withdrawn.

The claim objections to claims 5-16 with respect to improper multiple dependent form is withdrawn since said claims have been amended to remove improper multiple dependency.

The rejection under 35 USC 112 second paragraph, with respect to claims the synonym "wt %-DS" is withdrawn, since applicants cancelled rejected claims 3-4.

The rejection under 35 USC 102(b) of claims 1-4 over Heikkila et. al. is withdrawn since applicants cancelled claims 2-4 and claim 1 is amended to recite "process resulting in a separated saccharide dimmer fraction by removal of at least 75% of the saccharide trimers from the feed solution and/or by removal of at least 65% of the saccharide monomers from the feed solution, and resulting in

a yield of saccharide dimmer of over 85% weight % on dry solids basis" will overcome the anticipation rejection.

The following are claim rejections necessitated by applicants' amendments

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 and 5-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The recitation of the ranges "more than 65 weight %", "at least 65%", "at least 75%", "over 85 weight %", "90 to 96% or more", and "80°C or more" renders the claims indefinite since the claimed ranges lack upper or lower limits.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 18-19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the

time the application was filed, had possession of the claimed invention. Claim 18 is related to monomer and/or saccharide trimer content of 1.5-10 weight % on dry solids basis and claim 19 is related to monomer and/or trimer content of 1.5-3 weight % on dry solids basis. Applicant's amendment with respect to new claims herein has been fully considered, but is deemed to insert new matter into the claims since the specification as originally filed does not provide support for applicants' claim for the above said ranges. The description as originally filed does not provide support for the ranges of as instantly claimed. Note that, the court held that "subgenus range was not supported by generic disclosure and specific example within the subgenus range"; See e.g. *In re Lukach,* 442 F.2d 967, 169 USPQ 795 (CCPA 1971); the court also held that "a subgenus is not necessarily described by a genus encompassing it and a species upon which it reads" (see *In re Smith*, 458 F.2d 1389,1395, 173 USPQ 679, 683 (CCPA 1972). See also MPEP 2163.

Consequently, there is nothing within the instant specification which would lead the artisan in the field to believe that Applicant was in possession of the invention as it is now claimed. See *Vas-Cath Inc. v. Mahurkar*, 19 USPQ 2d 1111, CAFC 1991, see also *In re Winkhaus*, 188 USPQ 129, CCPA 1975.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1 and 5-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heikkila et. al. (Of Record) in view of Masuda et. al. (U. S. Patent No. 5,391,299; PTO-1449, dated 10/31/2005).

Heikkila et. al. discloses a method for fractionating a solution into two or more fractions by a chromatographic simulated moving bed process. (Abstract). Heikkila et. al. discloses Finex CS 13 GC, a polystyrene matrix crosslinked with divinylbenzene (DVB). (Column 14, lines 50-56). Heikkila et. al. discloses the use of Finex columns crosslinked with 5.5% DVB to separate sucrose, a disaccharide from trisaccharides and monosaccharides. (Columns 7 to 8, Example, 1, Table 1B, and Table 1C). The trisaccharides and monosaccharides in the feed solution was present as 2.8% and 0.6% weight of dry solid weight respectively. (Column 8, Table 1B). Heikkila et. al. further discloses the use of Purolite PCR 651 with 5.5% DVB for purification of sucrose, without any other saccharides. (Example 5, Columns 12-13, Tables 5A and 5B). Heikkila discloses molasses and starch hydrolysates as suitable feed solution. A separation temperature of 80°C is disclosed. (Example 2).

Heikkila et. al. does not expressly disclose the use of a feed solution with more than 65% weight % of saccharide dimmer or the ranges of monomer/trimer

claimed herein or the saccharification involving alpha-amylase or maltogenic alpha-amylase or a crystallization step.

Masuda et. al. discloses moving bed type fractionating method for the separation of maltose, a disaccharide from a discaccharide (maltose) content of 30-50% by weight resulting in maltose purity of 80% by weight. (Abstract; Column 16, lines 60-65). Matsuda further note that it is general practice to purify maltose product by crystallization. (Column 1, lines 45-50).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use an ion exchange resin with a degree of crosslinking of 5 to 8% followed by another ion exchange resin of a degree of crosslinking of 2 to 4.5% to separate saccharide dimer from monomers and trimers and to use an ion exchange resin with a low degree of crosslinking in a further step because Heikkila et. al. teaches the use of two different types of chromatographic columns to purify saccharide dimers in particular maltose from feed solutions.

One of ordinary skill in the art would have been motivated to use an ion exchange resin with crosslinking of 5 to 8% and an ion exchange resin of 2 to 4.5% crosslinking to purify disaccharides from feed solution because Heikkila discloses the use of multiple ion exchange resins to purify saccharide solutions. Furthermore, double purification using two different types of resins would have been within the grasp of one of ordinary skill in the art without significant

innovation to result in the invention as claimed. Choosing appropriate resins for the purification of feed solutions of saccharides with varying ranges of saccharide concentration is considered well within the grasp of one or ordinary skill in the art within their routine skills. It has been held that it is within the skill in the art to select optimal parameters, such as amounts of ingredients, in a composition in order to achieve a beneficial effect. See *In re Boesch*, 205 USPQ 215 (CCPA 1980). The recitation "process resulting in a separated saccharide dimmer fraction by removal of at least 75% of the saccharide trimers from the feed solution and/or by removal of at least 65% of the saccharide monomers from the feed solution, and resulting in a yield of saccharide dimmer of over 85% weight % on dry solids basis" is considered a functional recitation of an inherent property of the method of purifying a saccharide feed solution through two types of crosslinked resins.

Therefore, one of ordinary skill in the art would have reasonably expected that the use of an ion exchange resin with a corsslining of 2 to 4.5% along with another ion exchange resin of crosslining of 5 to 8% would result in substantially similar or better effects in purification.

Thus the claimed invention as a whole is clearly prima facie obvious over the combined teachings of the prior art.

Conclusion

No claim is allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roy P. Issac whose telephone number is 571-272-2674. The examiner can normally be reached on 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shaojia Anna Jiang can be reached on 571-272-0627.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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